TITLE:	**Station Shielding Verification Readiness Checklist**
***CATEGORY*:**	**Operations**
AUTHORED BY:	**APS Management; rev. 02/22/06**
REVIEWED BY:	**Rod Salazar, Kevin Beyer 02/22/06**
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ABSTRACT: The following is a list of items that are needed prior to performing a Shielding Verification of an experimental enclosure on the experimental hall floor at the APS.

General Beamline Check (local FC)

BCRRT
Required documents
- Bremsstrahlung ray traces
- Signed Configuration Control Components List
- Station maps for HP survey
- Approved Commissioning Activity Approval form
- Approved Routine Radiation Survey Procedure

Tag and verify locations of all Radiation Safety System components
- Shutters
- Beamstops
- Water-Cooled Masks
- Collimators

Tag all other components listed under Configuration Control
- Close and seal all labyrinths, insuring that the CCCL lists exact count of roof/wall labyrinths
- Close out all Work Requests

Notify beamline personnel in adjacent sectors/Users of Shielding Verification schedule and possible impact
- Restricted areas during validation
- Equipment setup (scissors lift)
- Ozone production

Roof access
- Fall protection (guard rails or tie-off points)
- Room for scissors lift access

Commissioning Set-up Check (RCS or local FC)

Commissioning window installation
- BM / ID commissioning window (from XFD-XFE, ASD-VAC)
- User-provided window for mono beam
- Verify alignment (beamline offsets and any special orientation)
- Check for window protection from heat and oxidation
- Water-cooling (from ASD-ME, XFD-XFE)
- Helium flow to window for ozone protection (check for full cylinder and regulator)

Bremsstrahlung beamstop (possibly temporally set up on CCSM provided table)

- Check for proper construction and support; strap and wrap with plastic if necessary
- Measure and verify physical location **and** actual dimensions with ray trace
- Add for at least 5 cm extra on the vertical and horizontal edges beyond the extremal ray on the raytrace.
- Thickness (deep) must be at least 30cm
- Check for line-of-sight paths
- Notate beam center and add dimensions to beam stop
- Check for aluminum or steel plate in front of lead stack for a Bending Magnet beamline. Check for water cooled photon stop for an Insertion Device beamline; acts as a heat radiator

Water-cooled copper beamstop

- Check location and beam height (will be verified with radiation paper)
- Check water-cooling of components
- In a few cases, verify BL-EPS connection. In the case where there is no BL-EPS, make sure that the permit is properly jumpered within the FE-EPS.

Ozone Mitigation

- Check installation of PVC flight tubes
- Check exhaust fan installation (4" hose fed out through a labyrinth)
- Check ozone monitor and ozone destruct unit (not always used)

Scattering Targets (Aluminum or Tungsten)

- Check target locations by appropriate means
- Check water cooling; not needed for mono beam surveys

Ion Chamber (for mono beam shielding verification)

- Check chamber alignment (this will be verified with radiation paper)
- Check Nitrogen purge (1 atm)
- Check for overall setup (specific setup of pre-amp (1 uA/V), converter (1x), rate-meter and power supply (800V) is located with the equipment)

Miscellaneous Equipment

- Scissors lift and ladders
- Radiation sensitive paper
- Plumb bob, tape measure, rulers, etc.

Schedule

- Keep up to date with schedule (through MCR, BCRRT chair.)
- Notify FC on duty of verification schedule
- Notify HP of date and time (arrange to arrive 15 minutes early for setup)
- Notify beamline personnel of date and time (specifically changes to schedule)

Beamline Systems (System Managers)
(Front End Vacuum, FE-EPS, PSS, ID and ASD-ME, XFD-XFE)

Notify all system managers of scheduled shielding verification

- Ask to have someone present or made available
- Verify from each system manager that the beamline has been checked and ready (operational)

Beamline Front End Vacuum

- Check and verify that PS1, SV, BIV and FEV are open
- Check cooling and helium flow to the window

FE-EPS

- Check Global Online
- Verify that FE-EPS is clear of faults
- Check BL-EPS line
- If connected, Trip Test should have been done, jumpers removed and BL-EPS cleared (green light)
- If not connected, check jumper installation

PSS

- Check that the PSS system is clear of faults
- Check station panels and verify the status of each and every light. **Any red light should be understood**
- If any BL-EPS light is red, verify jumper installation
- Locate User keys
- Search and secure each station
- Insure the proper operation of shutters that are downstream of PS2 (beamline shutters)

ID

- Check commissioning limit
- If possible, operate the device just prior to shielding verification and leave at 25mm.

Water

- Clear any DIW faults
- Check cooling to window and other beamline components (mask, slits and collimators)

Beamline Scientist

- Notify responsible beamline personnel of the schedule
- Insure all slits and apertures are fully open and the full beam is available for shielding verification.